Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-6.   Canceled.

7.   (Currently Amended) A receiver apparatus for receiving, by a plurality of receiver antennas, transmission signals transmitted from a transmitter apparatus by a plurality of transmitter antennas in a parallel manner and for estimating a channel matrix for causing the transmission signals to be related to received signals to demodulate the received signals based upon said channel matrix; the receiver apparatus ~~comprises~~ comprising:

calculation means for calculating a physical amount so as to estimate a radio line quality with respect to each of signal series based upon only said channel matrix;

determination means for evaluating the radio line quality based upon the physical amount calculated by said calculation means so as to determine a transmission parameter in a next transmission operation by said transmitter apparatus with respect to each of the signal series;

transmission means for transmitting the transmission parameter determined by said determination means to said transmitter apparatus; and

detection means for detecting a change in the transmission parameter from the received signals with respect to each of the signal series,

wherein the transmission parameter is a modulation level in mapping.

8.   (Currently Amended) A receiver apparatus as claimed in claim 7 wherein,

said physical amount is ~~an SNR~~ a signal-to-noise ratio (SNR) of said demodulated signals.

9.   (Currently Amended) A receiver apparatus as claimed in claim 7 wherein,

said physical amount corresponds to a sum of ~~SNRs~~ signal-to-noise ratios (SNRs) of signals which are detected by said plurality of receiver antennas when it is assumed that said plurality of transmitter antennas separately transmit signals.

10. (Original) A receiver apparatus as claimed in claim 9 wherein,

said physical amount corresponds to a sum of one, or a plurality of said SNRs having larger values.

11. Canceled.

12. (Currently Amended) A radio communication system comprising a transmitter apparatus for transmitting transmission signals by a plurality of transmitter antennas in a parallel manner; and a receiver apparatus for receiving said transmission signals by a plurality of receiver antennas, a for estimating a channel matrix for causing the transmission signals to be related to received signals to demodulate the received signals based upon said channel matrix; wherein

said receiver apparatus comprises:

calculation means for calculating a physical amount so as to estimate a radio line quality with respect to each of signal series based upon only said channel matrix ;

determination means for evaluating the radio line quality based upon the physical amount calculated by said calculation means so as to determine a transmission parameter in a next transmission operation by said transmitter apparatus with respect to each of the signal series;

transmission means for transmitting the transmission parameter determined by said determination means to said transmitter apparatus; and

detection means for detecting a change in the transmission parameter from the received signals with respect to each of the signal series; and wherein,

said transmitter apparatus comprises:

reception means for receiving said transmission parameter transmitted by said determining means; and

means for controlling the transmission operation with respect to each of the signal series based upon said transmission parameter received by said reception means,

wherein the transmission parameter is a modulation level in mapping.

13.   (Currently Amended) A radio communication system as claimed in claim 12 wherein,

said physical amount is ~~an SNR~~ a signal-to-noise ratio (SNR) of said demodulated signals.

14.   (Currently Amended) A radio communication system as claimed in claim 12 wherein,

said physical amount corresponds to a sum of ~~SNRs~~ signal-to-noise ratios (SNRs) of signals which are detected by said plurality of receiver antennas when it is assumed that said plurality of transmitter antennas separately transmit signals.

15.   (Original) A radio communication system as claimed in claim 14 wherein,

said physical amount corresponds to a sum of one, or a plurality of said SNRs having larger values.

16.   Canceled.

17.   Canceled.

18.   (Currently Amended) A transmitter apparatus for transmitting data by a plurality of transmitter antennas in a parallel manner to a receiver apparatus for receiving by a plurality of receiver antennas, said transmitter apparatus being used in a radio communication system in which a channel matrix for causing the signal transmitted by said transmitter apparatus to be related to said signal detected by said receiver apparatus becomes identical to a channel matrix for causing the signal transmitted by said receiver apparatus to be related to said signal detected by said transmitter apparatus; wherein,

said transmitter apparatus comprises:

estimation means for estimating said channel matrix;

calculation means for calculating a physical amount so as to estimate a radio line quality with respect to each of signal series based upon only said channel matrix;

-4-

determination means for evaluating the radio line quality based upon the physical amount calculated by said calculation means so as to determine a transmission parameter in a next transmission operation with respect to each of the signal series based upon the transmission parameter determined by said determination means,

wherein the transmission parameter is a modulation level in mapping.

19.   (Currently Amended) A transmitter apparatus as claimed in claim 18 wherein, said physical amount corresponds to ~~an SNR~~ a signal-to-noise ratio (SNR) of demodulated signals of said receiver apparatus.

20.   (Currently Amended) A transmitter apparatus as claimed in claim 18 wherein, said physical amount corresponds to a sum of ~~SNRs~~ signal-to-noise ratios (SNRs) of signals which are detected by said plurality of receiver antennas when it is assumed that said plurality of transmitter antennas separately transmit signals.

21.   (Original) A transmitter apparatus as claimed in claim 20 wherein, said physical amount corresponds to a sum of one, or a plurality of said SNRs having larger values.

22.   Canceled.

23.   (Currently Amended) A radio communication system comprising a transmitter apparatus for transmitting transmission signals by a plurality of transmitter antennas in a parallel manner; and a receiver apparatus for receiving said transmission signals by a plurality of receiver antennas, a channel matrix for causing the signal transmitted by said transmitter apparatus to be related to said signal detected by said receiver apparatus becomes identical to a channel matrix for causing the signal transmitted by said receiver apparatus to be related to said signal detected by said transmitter apparatus; wherein,

said transmitter apparatus comprises:

estimation means for estimating said channel matrix;

calculation means for calculating a physical amount so as to estimate a radio line quality with respect to each of signal series based upon only said channel matrix;

determination means for evaluating the radio line quality based upon the physical amount calculated by said calculation means so as to determine a transmission parameter in a next transmission operation with respect to each of signal series; and

means for controlling the transmission operation with respect to each of the signal series based upon the transmission parameter determined by said determination means; and wherein,

said receiver apparatus comprises:

means for detecting a change in said transmission parameter from the signals received from said transmitter apparatus with respect to each of signal series,

wherein the transmission parameter is a modulation level in mapping.

24.   (Currently Amended) A radio communication system as claimed in claim 23 wherein,

said physical amount corresponds to ~~an SNR~~ a signal-to-noise ratio (SNR) of demodulated signals of said receiver apparatus.

25.   (Currently Amended) A radio communication system as claimed in claim 23 wherein,

said physical amount corresponds to a sum of ~~SNRs~~ signal-to-noise ratios (SNRs) of signals which are detected by said plurality of receiver antennas when it is assumed that said plurality of transmitter antennas separately transmit signals.

26.   (Original) A radio communication system as claimed in claim 25 wherein,

said physical amount corresponds to a sum of one, or a plurality of said SNRs having larger values.

27.   Canceled.

28.   Canceled.

-6-

29.   (New) A receiver apparatus as claimed in claim 7, wherein said estimates the channel matrix using a pilot signal output by said transmitter apparatus, and wherein no information obtained by demodulating the received signals is utilized by said calculation means in calculating the physical amount.

30.   (New) A radio communication system as claimed in claim 12, wherein said estimates the channel matrix using a pilot signal output by said transmitter apparatus, and wherein no information obtained by demodulating the received signals is utilized by said calculation means in calculating the physical amount.

31.   (New) A transmitter apparatus as claimed in claim 18, wherein said estimates the channel matrix using a pilot signal output by said transmitter apparatus, and wherein no information obtained by demodulating the received signals is utilized by said calculation means in calculating the physical amount.

32.   (New) A radio communication system as claimed in claim 23, wherein said estimates the channel matrix using a pilot signal output by said transmitter apparatus, and wherein no information obtained by demodulating the received signals is utilized by said calculation means in calculating the physical amount.